(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number : **0 645 728 A2**

(12) EUROPEAN PATENT APPLICATION

(21) Application number : **94113239.1**

(51) Int. Cl.[6] : **G06K 7/10**

(22) Date of filing : **24.08.94**

(30) Priority : **25.08.93 US 111531**
26.07.94 US 273180

(43) Date of publication of application :
29.03.95 Bulletin 95/13

(84) Designated Contracting States :
DE FR GB IT

(71) Applicant : **SYMBOL TECHNOLOGIES, INC.**
116 Wilbur Place
Bohemia New York 11716-3300 (US)

(72) Inventor : **White, Jay P.**
Box 459
Bohemia, NY 11716 (US)
Inventor : **Stern, Miklos**
138-31 Jewel Avenue-Apt. 2d
Flushing, NY 11367 (US)
Inventor : **Barkan, Edward**
3 Enchanted Woods Court
Miller Place, NY 11764 (US)

(74) Representative : **Wagner, Karl H. et al**
WAGNER & GEYER
Patentanwälte
Gewürzmühlstrasse 5
D-80538 München (DE)

(54) Remote controller and telephone incorporating bar code reading facilities.

(57) An optical scanner (1) is incorporated into the handset (4) of corded, cordless and cellular telephones. The scanner includes a trigger (8), a scan module (10), a rechargeable battery, a digitizer (11) and a decoder (12) for reading indicia information such as bar coded telephone numbers, addresses, credit card numbers, shipping method, etc. The scanner can be used for auto-dialling, mail-ordering and keeping track of sales and inventory. Another embodiment discloses a portable remote controller (10) for a TV and VCR which includes a bar code scanner enabling the user to scan in programme times from bar code symbols (20) printed in TV guides (22). The scanned information is stored in memory, and when the time for the programme arrives, the controller (10) beeps to alert the user. If the user responds by pressing an appropriate key (12'), a signal is sent to the television (24) turning it on and allowing the user to watch the programme. If the user does not respond, a signal is sent to the VCR (26) and the programme is automatically recorded.

EP 0 645 728 A2

This invention relates to a novel telephone set and built-in scanner assembly for reading and transmitting data pertaining to bar codes, and further, to a bar code information processing system implementing such a telephone set and scanner assembly. It further relates to a remote controller for a video recorder having facilities for the scanning of bar code symbols.

We will consider first the telephone aspects. Optically encoded information, such as far codes, is common. As illustrated in Figures 1A, 1B a bar code symbol 2 consists of a series of light and dark regions, typically in the form of rectangles. The widths of the dark regions, the bars, and/or the widths of the light spaces between the bars indicate the encoded information. A specified number and arrangement of these elements represent a character. Standardized encoding schemes specify the arrangements for each character, the acceptable widths and spacings of the elements, the number of characters a symbol may contain or whether symbol length is variable, etc. The known symbologies include, for example, UPC/EAN, Code 128, Codabar, and Interleaved 2 of 5.

To decode a bar code symbol and extract a legitimate message, a bar code reader illuminates the bar code and senses the light reflected therefrom to detect the widths and spacings of the bar code and produces an electrical signal corresponding to the scanned bar code. This electrical signal is decoded to provide multiple alphanumerical characters which are descriptive of the article to which the bar code is attached or to some characteristic thereof. Such characters are typically represented in digital form as an input to a data processing system for applications in point-of-sale processing, inventory control, and the like.

There are several different types of bar code readers. A first type, a wand, contains an emitter and a detector, and the user manually moves the wand across the bar code. A detector senses the light reflected from a spot scanned by the wand across the bar code, and produces an electrical signal representing the encoded information. Wands have been disclosed, for example, in U.S. Patent Nos. 4,654,482, 4,907,264 and 4,937,853.

Another type of bar code reader is an optical scanner. The optical scanner is implemented as a gun-shaped device, having a pistol-grip type handle. A lightweight plastic housing contains a laser light source, a detector, optics and signal processing circuitry and a decoder, as well as a battery or other power source. A light-transmissive window in the front end of the housing allows outgoing light beam to exit and incoming reflected light to enter. Optical scanners have been disclosed, for example, in U.S. Patent Nos. 4,251,798; 4,360,798; 4,369,361; 4,387,297; 4,409,470 and 4,460,120, all of which have been assigned to Symbol Technologies, Inc., the assignee of this application.

Bar codes having become common, some telephone systems have incorporated bar code readers, such as disclosed in U.S. Patent Nos. 4,503,288, 4,654,482, 4,907,264, 4,937,853, 4,947,028 and 4,975,948 and DE 30 11 511. For example, in U.S. Patent Nos. 4,654,482, and 4,947,028, a bar code reader is attached to a telephone system for merchandise ordering and/or payment. Because the bar code reader and telephone set are separate, prior art telephone systems require more desktop "real estate," i.e, more space, compared to a telephone system that could incorporate the bar code reader in the telephone set. Thus, DE 30 11 511 to Thies and U.S. Patent No. 4,907,264 to Seiler et al., for example, disclose a reading wand incorporated into a handset for dialling a telephone number after reading a bar coded telephone number. However, because the handset is bulky and cumbersome, the user has difficulty in moving the want of the handset across a bar code in order to accurately read the bar code. Further, Thies and Seiler et al. us the wand only for dialling a telephone number and hence, is not useful in telephone systems requiring bar code readers for reading bar codes representing other than telephone numbers and transmitting the decoded bar code information over the telephone line.

Turning now to the remote controller aspects, it has long been known that it is possible to control devices remotely using light or infra-red beams (see for example US Patent 4,912,522), and it is now conventional to control video recorders and specifically VCR's (video cassette recorders) using an infra-red remote control unit. Users have often found it difficult in practice to use such units to program their VCR's, and a number of different approaches have been suggested to improve useability: see for example US Patent 4,488,179, 4,787,063 and 4,977,455. One of the approaches which seems to have substantial merit is that of attaching a bar code reader to the remote control unit, so that the user can program the VCR simply by scanning the appropriate bar code symbols which have been printed in a TV guide. This approach is referred to in US Patent 4,885,579, 4,906,830 and 5,253,066. US Patent 5,216,228 discloses that a VCR may be programmed from a remote location by means of a user scanning the program bar code symbol and then using an acoustic coupler to transmit the bar code information down a telephone line. At the other end of the line, the VCR is connected with a telephone receiver which decodes the acoustic signal and programs the VCR for the requested program.

It is an object of the present invention to provide a telephone system for overcoming the problems of the prior art. The telephone based bar code reading system may have an optical scanner incorporated into the handset or the telephone base. Such telephone bar code reading system reduces the desktop "real estate," and reads bar codes for auto-dialling of tele-

phone numbers and transmits decoded bar code information over the communication systems. To achieve the foregoing and other objects, and to overcome the shortcomings discussed above, a telephone set enabling reading to indicia in accordance with the present invention may comprise: a means for transmitting and receiving audio signals over a communications network; and an optical scanner having means for emitting and automatically deflecting a light beam to scan across the indicia, means for detecting the light beam reflected back from the indicia and producing corresponding electrical signals, and means for converting the electrical signals into decoded indicia information.

Furthermore, a telephone coupled to a communications network in accordance with the present invention may comprise: a handset having means for receiving and transmitting audio signals, a reader for reading indicia, and a trigger on the handset for activating the reader to convert the indicia into decoded indicia information; and means for transmitting the audio signals and decoded indicia information over the communications network.

The present invention also provides a communications system for transmitting decoded bar code information, preferably comprising; a telephone system comprising a plurality of telephone sets, each of the plurality of telephone sets having a built-in optical scanner for reading bar codes on a printed medium for transmission as decoded bar code information; a host processor for receiving the decoded bar code information and transmitting instructions to the telephone system; and a communications network for establishing connection between the telephone system and the host processor.

It is a further object of the present invention to provide a remote controller having improved functionality when compared with the controllers of the prior art.

It is a further object to provide a controller that will be of assistance to users who regularly or occasionally watch shopping channels, and order products or services which have been advertised.

It is a further object to provide a controller capable of operating a TV set as well as a VCR.

According to another aspect of the invention there is provided a portable remote controller comprising:

a bar code scanner;

signal transmitting means adapted to transmit a control signal for remote control of a television and of a video recorder;

user input means;

memory means;

real-time clock means arranged to produce a clock signal;

the bar code scanner being arranged to scan a bar code symbol representative of a television program and including program start time and channel information, said information then being stored in the memory;

means for repeatedly comparing the stored start time with the clock signal and when the clock signal corresponds with the start time providing an indication to a user that the program is about to start;

means for transmitting a control signal from the signal transmitting means to a video recorder instructing the video recorder to record the program if no response to the indication is received from the user via the user input means; and

means for transmitting a control signal from the signal transmitting means to a television, instructing the television to switch to the appropriate channel so allowing the user to view the program if a response is received from the user, via the user input means.

The control signal sent out by the signal transmitting means is preferably an infra-red signal, but other remotely-operating signals could also be used such as ultrasound. The video recorder with which the invention is to be used will typically be a VCR (video cassette recorder) but the invention would be equally applicable to other types of device for recording television programs, such as devices which record the program to optical, magnetic or other types of disk.

The bar code scanner is preferably an integral part of the portable remote controller, but it could also be a separate unit, attached to the main body of the controller by means of a wire.

According to another aspect of the present invention there is provided a portable remote controller comprising:

a bar code scanner;

signal transmitting means adapted to transmit a control signal for remote control of a video recorder;

telephone control means adapted to send a control signal to a telephone;

user input means;

memory means;

real time clock means arranged to produce a clock signal;

the bar code scanner being arranged to scan a bar code symbol representative of a telephone program and including program start time, channel information, and ordering details of a product or service associated with the said television program;

means for repeatedly comparing the start time with the clock signal and when the clock signal corresponds with the start time, causing the signal transmitting means to transmit a control signal instructing the video recorder to record the program; and

means for actuating the telephone control means, on receipt of instructions from a user via the user input means, instructing the telephone to call a supplier and automatically to place an order for the product or service.

The controller preferably communicates with a

telephone by means of an infra-red signal, but other means of communication, such as ultrasound, are not excluded. Alternatively, the controller may be a telephone handset in its own right, in which case no remote communication between the controller and the telephone will be required. In one embodiment, the controller may be integrated within a portable or a mobile telephone hand set. A portable telephone is one in which the handset communicates by radio with a local base unit, connected to a telephone line in the usual way. A portable telephone cannot usually be taken very far from its base station. A mobile telephone, on the other hand, has no base station and communicates by radio either directly with a satellite or, more usually, with one of a series of nodes, spaced across the country and comprising part of a cellular telephone system.

The invention will be described in detail with reference to the following drawings in which like reference numerals refer to like elements wherein:

Figure 1A illustrates a telephone handset incorporating an optical scanner in accordance with the invention;

Figure 1B illustrates a telephone base incorporating an optical scanner in accordance with the invention;

Figure 2 illustrates in detail a scan module of an optical scanner depicted in Figures 1A and 1B;

Figure 3 is a block diagram of the telephone set having an optical scanner;

Figure 4 illustrates the optical scanner incorporated into a handset of a cordless telephone;

Figure 5 is a flow chart illustrating the sequence for auto-dialling;

Figure 6 illustrates a communication system for transmitting decoded bar code information by a telephone system to a mail-order system;

Figure 7 illustrates bar coded information of a catalog being scanned by an optical scanner in a handset;

Figure 8 is a flow chart illustrating the sequence for automated mail-ordering of items in the catalogue of Figure 7 over the communication system of Figure 6.

Figure 9A shows an embodiment of a portable remote controller according to the present invention;

Figure 9B shows another embodiment of a portable remote controller according to the present invention;

Figure 10A shows a magazine from which items may be ordered;

Figure 10B shows an alternative to the magazine of Figure 10A; and

Figure 11 is a block diagram illustrating in more detail the portable remote controllers of Figures 9A and 9B.

Telephone-based embodiments

Figure 1A is a schematic drawing of a handset 4 of a telephone set 6 having a handset-implemented scanner 1 (various components of the telephone have been omitted for simplicity). The handset 4 is designed to be aimed at a bar code symbol 2 by a user from a position in which the optical scanner 1 is spaced from the bar code symbol, i.e., the scanner does not contact the bar code symbol 2 and is not manually moved across the symbol. The handset 4 has a trigger 8 to activate a light beam from a scan module 10, and a light-transmissive window 5 allows the light beam 15 to exit from the handset 4. The light beam is reflected off the bar code 2, and the reflected light 17 re-enters through the light-transmissive window 5. The scan module 10 detects the reflected light 17 and produces an electrical signal proportional to the intensity of the reflected light.

A digitizer 11, associated with or included in the scanner, processes the electrical signal to produce a pulse signal, where the widths and spacings between the pulses correspond to the widths of the bars and the spacings between the bars. The digitizer serves as an edge detector or wave shaper circuit, and the threshold value set by the digitizer determines what points of the electrical signal represent bar edges. The pulse signal from the digitizer is applied to the decoder 12. The various decoder functions are performed by a CPU with associated program memory and random access data memory.

The decoder 12 determines the pulse widths and spacings of the signal from the digitizer. The decoder 12 then analyzes the widths and spacings and decodes a legitimate bar code message that includes an analysis to recognize legitimate characters and sequences, as defined by the appropriate code standard. This may also include an initial recognition of the particular standard encoding scheme. This recognition of the standard is typically referred to as auto-discrimination.

Alternatively, Figure 1B is a schematic drawing of a telephone base of a telephone set 6 having a telephone base-implemented scanner 1 (again, various components of the telephone have been omitted for simplicity). The telephone base-implemented scanner 1 has the same components as the handset-implemented scanner. To read a bar code, the user brings the bar code symbol 2 in the vicinity of the light transmissive window 5 of the telephone base 3 and activates a trigger 8 such as a push button on a keypad 58 of the telephone base to read the bar code.

Figure 2 illustrates in more detail the scan module 10 of an optical scanner depicted in Figures 1A and 1B. The scan module 10 contains light source, mirrors, scanning motor and detector positioned in the module housing as shown. To scan a bar code, a laser light source 16 generates a light beam which is

optically modified to form a beam spot of a certain size at a working distance. The light beam is directed by optical components along a light path toward the bar code symbol 2 located in the vicinity of the working distance for reflection from the bar code symbol 2. A lens 22 (or multiple lens system) may be used to focus the scanning beam into a scanning spot at an appropriate reference plane.

The laser light source 16, such as a semiconductor laser diode, introduces a light beam into the axis of the lens 22, and the beam passes through a partially-silvered mirror 24 and other lenses or beam-shaping structure as needed. The light beam is reflected from an oscillating mirror 26 which is coupled to a scanning motor 28 energized when the trigger 8 is pulled. The oscillation of the mirror 26 causes the outgoing light beam 15 to scan back and forth in a desired pattern. Alternatively, the laser light source 16 can be oscillated to cause the outgoing light beam 15 to scan.

A variety of mirror and motor configurations can be used to move the beam in a desired scanning pattern. For example, U.S. Patent No. 4,251,798 discloses a rotating polygon having a planar mirror at each side, each mirror tracing a scan line across the symbol. U.S. Patent Nos. 4,387,297 and 4,409,470 employ a planar mirror that is repetitively and reciprocally driven in alternate circumferential directions about a drive shaft on which the mirror is mounted. U.S. Patent No. 4,816,660 discloses a multi-mirror construction composed of a generally concave mirror portion and a generally planar mirror portion. The multi-mirror construction is repetitively and reciprocally driven in alternate circumferential directions about a drive shaft on which the multi-mirror construction is mounted.

The light 17, reflected back by the bar code symbol 2, passes back through a window 20 for application to a detector 30. In the exemplary scan module 10 illustrated in Figures 1A and 1B, the light 17 reflects off the mirror 26 and partially-silvered mirror 24 and impinges on the light sensitive detector 30. The detector 30, such as an optical sensor or a photodetector having a field of view extending across and slightly past the bar code symbol 2, detects light of variable intensity reflected off the bar code symbol 2 and generates electrical signals indicative of the detected light.

Another example of a suitable scan module is disclosed in commonly assigned copending application Serial No. 07/952,414, filed 1992. Further, a scan module, either with or without the digitizer and decoding circuitry, could be formed on a single substrate using appropriate micro-machining techniques, such as described in commonly assigned copending application Serial No. 07/745,776. The disclosures of both applications are incorporated herein by reference.

For illustrative purposes, the digitizer 11 and the decoder (CPU) 12 are shown as included in a controller 39 in Figure 3. However, as illustrated in Figures 1A and 1B, the digitizer 11 and decoder 12 may be separate from the controller 39. As can be appreciated, the handset 4 can incorporate the scan module 10, the trigger 8, and the rechargeable battery 14, and the telephone base 35 can incorporate the digitizer 11 and the decoder 12 with the controller 39. A transmitter (microphone) 40 and a receiver (speaker) 42 are coupled to a speech circuit 44 for transmission and reception of audio signals. The speech circuit 44 is also coupled to the controller 39 for transmission and reception of communication signals to and from a communication network interface 45 and a communications network 46.

The scan module 10, trigger 8 and rechargeable battery 14 are connected to the controller 39. When the trigger 8 is operated, the controller 39 activates the scan module 10 for reading a bar code. The controller 39 is also coupled to a pulse generator 48 and a tone generator 50 for converting a decoded bar code information to communication signals for transmission on a telephone line 52. A switch 54 is provided for activating one or the other of the pulse and tone generators. The pulse generator 48 causes transmission of the decoded bar code information as dial pulses to the telephone line 52, whereas the tone generator 50 transmits the same information as tones.

A memory 56, which can be any combination of RAMs, ROMs, EPROMs and EEPROMs, is also connected to the controller 39. The memory 56 stores telephone numbers for autodialing as well as the read bar coded information for conversion into communication signals and for transmission to the communications network 46. Alternatively, the controller 39 can bypass the memory 56 and directly transmit the read bar coded information over the telephone line 52. Further, the memory 56 stores the program routines for executing various functions, such as auto-dialing, mail-ordering, making payments, keeping track of sales and inventory, etc.

A keypad 58 provides inputs to the controller 39, and a display 60, in conjunction with a display driver (not shown), displays the status of the telephone set, the optical scanner and various other information. The keypad 58 includes push buttons for manually entering numbers and for auto-dialing. When the auto-dialing push button is pressed, the controller waits for either another manual input of numbers corresponding to a telephone number stored in the memory 56 or electrical signals from the scan module 10 for decoding and dials the appropriate telephone numbers using the pulse generator 48 or the tone generator 50. The display 60 also indicates the number being dialed during auto-dialing.

The keypad 58 further includes enter and cancel push buttons for entering and canceling the decoded bar code information. For example, when the enter

push button is pressed, the controller 39 either stores the decoded bar code information in the memory or transmits the decoded bar code information to the telephone line 52 using the pulse or tone generators 48, 50. When the cancel push button is depressed, the controller 39 disregards the electrical signals from the scan module. The display 60 indicates whether the scanned bar code should be entered or cancelled and confirms the entering and cancelling of the scanned bar code.

The display 60 is also used to display various other information. For example, if the telephone set 6 receives an incoming telephone signal, the display, in conjunction with a ringer 62, indicates to the user that there is an incoming call. If the optical scanner 1 is in use when the incoming telephone signal is received, the user can depress a push button on the keypad 58 to disable the optical scanner and answer the telephone call. Alternatively, the controller 39 can automatically switch over to allow the user to answer the telephone call after storing the decoded bar code information in the memory 56 for later use.

As can be appreciated, the various components of the telephone set 6, and the optical scanner can be placed in the handset 4 or the telephone base 3. In the preferred embodiment of Figure 1A, the scan module 10, the digitizer 11, the decoder 12, the trigger 8 and the rechargeable battery 14 are placed in the handset 4, and the components of the telephone set 6 can be distributed in the handset 4 and the telephone base 3. Further, additional output devices 64 can be coupled to the controller 39.

Typically, the user operates the optical scanner while a cord 66 is attached to handset 4 and the base 3. However, the optical scanner 1 can be used with the cord 66 detached, i.e., portable mode. In this mode, the user detaches the cord 66 from the handset 4 or the telephone base 3, and the rechargeable battery 14 provides power to the components in the handset 4. The user aims the window 5 of the telephone handset 4 at the bar code 2 and depresses the trigger 8 to read the bar code 2. The controller 39 stores the read bar code information in the memory 56 when the controller 39 detects that the cord 66 is detached from the handset 4 or the telephone base 3.

When the cord 66 is reattached to the handset 4 or the telephone base 3, the user depresses a push button on the keypad to begin the transmission of the stored information over the telephone line 52. Alternatively, the controller 39 automatically transmits the stored information when the controller 39 detects the reattachment of the cord 66 to the handset 4 or the telephone base 3.

In an alternative embodiment, the optical scanner is incorporated into the handset of a cordless telephone. Cordless telephones are known in the art and are disclosed in, for example in U.S. Patent Nos. 4,481,382, 4,508,935 and 4,661,659. Figure 4 illustrates the optical scanner 1 incorporated in the handset 4 of the cordless telephone 68. Unlike a corded telephone, the cordless telephone 68 includes a wireless circuit WC1 and an antenna A1 in the handset 4 and a wireless circuit WC2 and an antenna A1 in the telephone base 3. Moreover, the telephone base 3 includes the pulse generator 48, the tone generator 50 and a second controller 70. As indicated in dotted lines, the keypad 58, display 60, memory 56, ringer 62 and additional output devices 64 can be incorporated in the handset 4 or the telephone base 3 or both. However, like the preferred embodiment of Figure 1A, the trigger 8, scan module 10, digitizer 11, decoder 12 and rechargeable battery 14 are incorporated in the handset 4 for reading the bar codes.

The optical scanner 1 of the cordless telephone 68 is operated in the same manner as a corded telephone. However, in the cordless telephone 68, the decoded bar code information is transmitted through the wireless circuit WC1 and antenna A1 of the handset 4 to the antenna A2 and wireless circuit WC2 of the telephone base 3 for processing by the controller 70, the pulse or tone generator 48, 50 and the communication network interface 45 to the telephone line 52. The controllers 39 and 70 can bypass the memory either in the handset 4 or the telephone base 3 to transmit the decoded bar code information to the telephone line 52 or can store the decoded bar code information in the memory for transmission onto the telephone line 52 after a predetermined period of time.

Alternatively, when the optical scanner 1 of the handset 4 is used to scan bar codes far from the telephone base and/or when the user wants the controller 39 to enter a store mode, the user can depress a button or the controller enters into a store mode of operation upon detection of weak antenna transmission signals to store the decoded bar code information in the memory. The stored information is transmitted to the telephone base 3 for transmission onto the telephone line 52 when the user depresses a transmit button to allow transmission of the stored information and/or when the controller 39 detects a strong antenna signal. Moreover, prior to the controller 39 terminating the telephone connection, the stored information can be transmitted to the telephone line 52 when the user places the handset 4 into a cradle (not shown) of the telephone base 3 so that there is a direct linkage between the handset 4 and the telephone base 3 through the contacts 72A, 72B.

As can be appreciated, the cordless telephone can be modified to incorporate the optical scanner in a cellular telephone. The cellular telephone may employ radio technology, such as spread spectrum for communication signals, to transmit and receive information. The use of spread spectrum in communications is disclosed in, for example, U.S. Patent Nos. 4,222,115, 4,672,658, 4,888,788, 4,918,707,

4,943,975, 4,964,138, 4,984,247, 5,016,255 and 5,022,047.

Figure 5 is a flow chart illustrating the sequence for auto-dialing a called party's telephone number by a caller/user. The telephone set is initially set at a standby mode (S1), and the controller waits for an auto-dial button to be depressed (S2). If the caller dials a telephone number instead of the auto-dial button, the controller dials the inputted telephone number (S3) and connection is established (S9, S10). If the auto-dial command is selected by depression of an auto-dial button, the controller waits for the caller/user to either select an appropriate combination of keypad inputs or activate the trigger (S4). When the controller detects keypad inputs, the controller retrieves the pre-stored telephone numbers in the memory for dialing (S5, S9) and establishing connection (S10) between the caller and the called party.

To auto-dial a telephone number using the optical scanner, the caller/user aims the window of the telephone handset at a bar coded telephone number. The bar coded telephone number can be printed on the telephone directory, business cards, credit cards, or any available medium having bar coded telephone numbers. When the caller/user activates the trigger, the bar coded telephone number is scanned and detected by the scan module (S6). The digitizer and decoder, respectively, digitizes and decodes the electrical signals from the scan module for dialing the decoded telephone number (S6, S9) and establishing connection (S10).

If the keypad inputs do not correspond to any pre-stored number, or when an error occurs during the scanning of the bar code, the display indicates an occurrence of the error. The controller instructs the user to re-enter the keypad inputs or re-scan the bar code (S7). The controller also tracks the number of error occurrences, and after a predetermined number of error occurrences, the controller terminates the auto-dial feature to instruct the caller/user to enter the telephone number manually (S8). Alternatively, the caller/user can terminate the auto-dial feature any time and dial the number manually.

Figure 6 illustrates a communication system 74 for transmitting decoded bar code information by a telephone system 75 to a mail-order system 76. The telephone system comprises a plurality of telephone sets 6A-6C (only three are shown for illustrative purposes), and each of the telephone set 6A-6C has an optical scanner 1 built into the telephone handset 4 or base 3. The communications network 46 couples the telephone system 75 and the mail-order system 76.

As illustrated in Figure 7, a caller scans bar coded information in a catalog 78 using, for example, the optical scanner 1 incorporated in the handset 4 to order an item 94. The catalog 78 has bar coded information 80 identifying the caller such as name, address and telephone number. Further, the catalog 78 includes bar coded item number 82, quantity 84, color 86, size 88 and other information 90 identify the item. The catalog 78 also includes bar code shipping method 92 and payment method 93.

Figure 8 is a flow chart illustrating the sequence for ordering an item using the catalog 78 illustrated in Figure 7 and the telephone set 6A-6C of the telephone system 75 in the communications system 74 illustrated in Figure 6. The telephone is initially set at a stand-by mode (S1). Portion D (dotted lines) of the method illustrated in Figure 5 is used to either manually dial or auto-dial the telephone number of the mail-order company. For auto-dialing, the caller/user can scan the bar coded telephone number on the catalog to establish connection with the automated mail-ordering system of the mail-order company.

When connection is established, the automated system instructs the caller/user to enter his/or her bar coded identification 80 identifying the caller's name, address, telephone number and other information printed on the catalog 78 (S11). Such information may be also printed on a driver's license, business card, etc. The mail-order system 76 then instructs the caller/user to scan the bar coded item number 82, quantity 84, color 86, size 88 and other information 90 identifying the item on the catalog (S12).

After the decoded bar code information is received, the mail-order system 76 instructs whether the order is complete (S13). If the caller/user desires to order another item, the caller/user scans the bar coded information of other items (S12), and the sequence is repeated until the caller/user indicates to the automated system that the order is complete. Thereafter, the automated system instructs the caller/user to enter the bar coded shipping method 92, e.g., air or ground, (S14) and asks whether the shipping address is the same as the user identification information (S15). If not, the automated system instructs either to manually enter the shipping address or scan a bar coded shipping address (S16).

Thereafter, the automated computer transmits the total amount of the purchase and instructs the caller/user to scan the bar coded payment method 93 on the catalog 78 (S17). If the user scans either payment by check (S18) or C.O.D. (S19), the automated system sends the necessary instructions for such type of purchases (S20, S21) and the purchase is completed (S27). If the user chooses payment by a credit card, the automated system instructs the user to scan the bar coded account number on the credit card (S22). When the decoded account number is received, the automated system confirms the account number (S23). Once confirmed, the user can hang up the telephone to complete the purchase (S27), and the order will process by the mail-order company to deliver the ordered items after payment.

If there is an error (S24), the automated system instructs the user to re-scan the account number or

if desired, manually enter the account number on the telephone keypad (S22). Further, the user can change the method of payment (S17). After a predetermined number of errors (S24), the automated systems asks the user whether he/she desires to talk to a representative or to terminated the order (S25). If the representative is able to help process the order (S25A), the order can be completed (S27), and the connection is terminated. If the user does not want to talk to a representative or the representative is not able to help, the user can hang up to terminate the order (S26).

As can be appreciated, during the entire ordering process, the controller conveys the instructions of the automated system to the user using the receiver and/or the display of the telephone set. Further, the scanned and decoded bar code information can be displayed for confirmation. A printer can be also attached as an additional output device to print out a hard copy of the order. Moreover, the enter and cancel buttons on the keypad can be used to send and correct scanned information to the automated system. Alternatively, the automated system can instruct the user to confirm the scanned information prior to sending the decoded bar code information.

The optical scanner in the handset can be used to track of inventory location. Clerks can "read" the inventory using the optical scanner of the handset by scanning a bar coded serial number on each piece of inventory to enter the location and status of the piece. (Rather than using a separate computer system, the location and status of the inventory can be processed by a PBX, which has its own computer system.)

The present invention can be used in business to keep track of inventory and sales. For example, in a retail store, a separate bar code reader may be provided to enter the bar coded labels of merchandise during purchase, and a separate computer system used to keep track of inventory and sale. With the present invention, the telephone set can be coupled to the cash register, and the bar coded label scanned by the optical scanner of the handset. Moreover, a local PBX computer may be used to keep track of the sales and inventory. At the end of the business day, the local PBX computer can transmit the sales and inventory information to the main computer at the headquarters of the retail store.

Remote Controller Embodiments

Turning first to Figure 9A, there is shown a portable remote controller 10 having a standard keyboard 12, display 14, and infra-red signal transmitter 16. The remote controller further includes an integral bar code scanner 18 enabling a user to scan bar code symbols 20 printed in a TV guide or other magazine 22. In an alternative embodiment (not shown) the bar code scanner 18 could be connected to rather than integral with the remote controller 10.

The infra-red transmitter 16 is arranged to send infra-red control signals to a television 24, a VCR 26 and a telephone 28, where the signals are picked up by respective infra-red detectors 30,32,34. The television and the VCR are connected by appropriate wiring 35, and both receive signals via a common aerial 37.

The operation of this system will now be described with reference to Figure 9 and to Figure 11, which is a schematic block diagram of the main features of the remote controller 10. The user selects from the TV guide 22 the program that he wants to watch and scans the corresponding bar code 20 with the bar code scanner 18. As will be seen in Figure 3, the bar code scanner 18 comprises a scanner module 24, along with means 26 for transmitting a scanning light beam and means 28 for receiving light which has been reflected from the bars and spaces of the bar code symbol 20. The bar code symbol is decoded by a microprocessor 30, and the corresponding information stored in a memory 34. Typically, this information will comprise details of the program in question, including the starting time, the finishing time and the channel. Other information such as the name of the program might also be incorporated within the bar code symbol. The information may be shown on the display 14 and may, if necessary, be amended or corrected by the user via the keyboard 12.

Once the information has been stored in the memory, the user then places the remote controller in a convenient location within sight of the TV and the VCR. A clock 36 within the controller produces a real time clock signal, and this is continually polled by the microprocessor 30 and compared with the program start time stored in the memory 34. When the time for the program arrives (or perhaps a predetermined time before the program is due to start) the controller causes a speaker 38 to emit a warning beep to alert the user. If the user answers the beep, by pressing an appropriate key on the keyboard within a given time, the microprocessor actuates the infra-red transmitter 16 which sends a signal to the TV 24, causing the TV to switch itself on and turn to the appropriate channel, so that the user can watch the program. Instead of responding by way of the keyboard 12, a special push-button or key 12' (Figure 9A) may be provides solely for that purpose. On the other hand, if the user does not answer the beep within the allotted time, the microprocessor actuates the infra-red transmitter to send a signal to the VCR instructing the VCR to record the program. The infra-red signal that is sent to the VCR may download the finishing time into the VCR, so that the VCR may automatically switch itself off when the program has finished, or alternatively the controller may send a separate signal to the VCR, at the finishing time, instructing it at that point to turn itself off.

It will be appreciated from the above description that the infra-red transmitter 16 needs to transmit differently coded signals to the television 24 and to the VCR 26. As shown in Figure 11, this may be achieved by means of an infra-red signal module 40, the purpose of which is to encode the signals to be transmitted appropriately, according as they are to be transmitted to the television or to the VCR. The infra-red signal module 40 provides an output signal to a transmitter unit 42 which produces the necessary beam according to the encoded signals it has received. As an alternative to the infra-red signal module 40, the encoding could be carried out by the microprocessor 30.

In the embodiment just described, the items shown in the box 100 in Figure 11 are not present. These will be described below, with reference to an alternative embodiment.

The way in which this embodiment may be used for home shopping will now be described with reference to Figures 9A, 10A and 10B. A promotional item for sale may be bar coded in a magazine 78. The details given may include a photograph or drawing of the item, 94, and bar codes representative of the item number 82, the quantity to be ordered 84, the colour 86, and the size 88. The user may also retain a separate card or a separate sheet containing bar codes representative of the identity of the caller 80, the shipping method to be used 92, and the method of payment 93. All of these bar code symbols may be one-dimensional symbols as shown in Figure 10A, or alternatively two-dimensional symbols as shown schematically in Figure 10B.

At least one bar code 90 encodes additional information about the product, and in the present embodiment that additional information may be details of when the product is to be shown on the "shopping channel". Typically, the bar code symbol will encode at least a starting time for the promotion on the shopping channel, a finishing time, and the channel number. If the user would like a video demonstration of the item, he simply scans the bar code symbol 90 and, at the appropriate time, the program will be recorded automatically for play-back later at the user's convenience.

After playing back the program, the user may decide to order the item, in which case he simply indicates that fact by pressing an appropriate key on the keyboard, and the infra-red transmitter 16 sends an appropriately coded order to the telephone 28. The telephone then calls the supplier, and places the order automatically.

Where the supplier of the item does not provide any options, as to colour, size and so on, that is all that will be required. Where there are options, however, the user will need to go back to the magazine and scan the appropriate bar codes for the options before pressing a button on the keyboard to instruct the controller to send the coded message to the telephone. The information on the identity of the caller, shown in Figure 10A as bar code symbol 80, will generally not be required as this information can permanently be stored in the memory 34. Similarly, information could permanently be stored on the user's preferences, such as the preferred payment method and the preferred shipping method.

A further embodiment of the invention, in which the controller is incorporated into a portable or mobile telephone hand set 49, is shown in Figure 9B. Details are exactly as described above, except that the controller circuitry shown in Figure 11 now includes the additional items within the box 100, namely telephone circuitry 46 and an aerial 48. The telephone circuitry is connected to the microprocessor 30 by means of a line 44, this line simply replacing the infra-red connection between the controller and the telephone of Figure 9A.

The telephone hand set 49 is preferably a mobile or cellular telephone so that, when an order is to be placed, the information is directly transmitted from the aerial 48 via a radio signal 50 to the pick-up point (not shown) of the cellular telephone network. Alternatively, the handset 49 may be a mobile 'phone, in which case the user will have a corresponding base station 28' in the vicinity. The mobile handset communicates with the base station, and the base station is connected to an external telephone line 60 in the usual way.

It should be noted that the objects and advantages of the invention may be attained by means of any compatible combination(s) particularly pointed out in the items of the following summary of the invention and the appended claims.

The invention may be summarized as follows:

1. A telephone set (6) enabling reading of indicia comprising:
   (a) means for transmitting and receiving audio signals over a communications network; characterised by
   (b) an optical scanner (1) having
      (i) means for emitting and automatically deflecting a light beam to scan across the indicia,
      (ii) means for detecting the light beam reflected back from the indicia and producing corresponding electrical signals, and
      (iii) means (11,12) for converting the electrical signals into decoded indicia information.

2. The telephone set
wherein the optical scanner (1) is in a handset (4) of the telephone, and the handset includes a trigger (8) for activating the optical scanner to read the indicia.

3. The telephone set
wherein the optical scanner (1) is in a base unit

of the telephone, and wherein the telephone comprises a button (8) for activating the optical scanner to read the indicia.

4. The telephone set further comprising means (14) for powering the optical scanner (1).

5. The telephone set further including a manual control for entering and cancelling indicia which have been read by the optical scanner (1) for transmission on the communications network.

6. The telephone set further comprising: a memory (56) for storing decoded indicia information, telephone numbers or programs for executing commands inputted to the telephone set; a keypad (58) for receiving the telephone numbers and commands; and means (45) for transmitting the audio signals and decoded indicia information and receiving communication signals from the communications network.

7. The telephone wherein the emitting and detecting means are incorporated into a scan module (10) having: a laser light source (16) for emitting the light beam, a lens system (22) to focus the light beam, a mirror (26) for directing the light beam focused by said lens system to the indicia, a motor for oscillating said laser light source or said mirror such that the light beam scans across the indicia, and a detector (30) for detecting the light beam reflected from the indicia.

8. The telephone set wherein the emitting and receiving means further comprises a window (20) for light passing between the scan module and detecting means.

9. The telephone set , wherein the converting means comprises: means (11) for digitizing the electrical signals; and means (12) for decoding the electrical signals, digitized by the digitizing means, into decoded indicia information.

10. The telephone set , wherein the telephone set (6) is of a corded, cordless or cellular type.

11. A telephone coup;led to a communications network comprising:

(a) a handset having

(i) means for receiving and transmitting audio signals,

(ii) a reader (1) for reading indicia, and

(iii)a trigger (8) on the handset for activating the reader to convert the indicia into decoded indicia information; and

means for transmitting the audio signals and decoded indicia information over the communications network.

12. The telephone , wherein the reader (1) is an optical scanner including means (16,26) for emitting and automatically deflecting a light beam to scan across the indicia; means (30) for detecting the light beam reflected back from the indicia and producing corresponding output electrical signals; and means (11,12) for converting the electrical signals into decoded indicia information.

13. The telephone , wherein the handset further includes a rechargeable battery (14) for powering the bar code reader during portable operation of the handset.

14. The telephone , wherein the bar code reader includes a scan module having: a laser light source (16) for emitting the light beam; a lens system (22) to focus the light beam; a mirror (26) for directing the light beam focused by the lens system to the indicia; a motor (28) for oscillating the laser light source or the mirror such that the light beam scans across the indicia; and a detector (30) for detecting the light beam reflected from the indicia.

15. The telephone further comprising: a memory (56) for storing decoded indicia information, telephone numbers or programs for executing commands inputted to the telephone set; a keypad (58) for receiving the telephone numbers or commands; and means (45) for transmitting the audio signals and decoded indicia information to the communications network and for receiving communication signals from the communications network.

16. The telephone wherein the handset includes a window (5) for light passing between the handset and bar code.

17. A communications system for transmitting decoded bar code information, comprising: a telephone system comprising a plurality of telephone sets (6A,6B,6C) each of the plurality of telephone sets having a built-in optical scanner (1) for reading bar codes on a printed medium for transmission as decoded bar code information; a host processor for receiving the decoded bar code information and transmitting instructions to the telephone system; and a communications network (46) for establishing connection between the telephone system and the host processor.

18. The communications system wherein the optical scanner comprises:

(i) means for emitting and automatically deflecting a light beam to scan across a bar code,

(ii) means (3) for detecting the light beam reflected back from the bar code and producing corresponding electrical signals, and

(iii) means (11,12) for converting the electrical signals into decoded bar code information.

19. The communications system , wherein for each telephone set, the optical scan-

ner (1) is in a handset of the telephone set, the handset including a trigger (8) for activating said optical scanner to read the bar code.

20. The communications system

wherein, for each telephone set, the optical scanner (1) is in a base unit of the set, the base unit including a button (8) for activating the optical scanner to read the bar code.

21. The communications systems

wherein each telephone set further comprises means for powering the optical scanner.

22. The communications system

wherein each telephone set further includes a button for entering and cancelling bar codes which have been read by the optical scanner for transmission on the communications network.

23. The communications system

wherein each telephone set further comprises: a memory (56) for storing decoded bar code information, telephone numbers or programs for executing commands inputted to the set; a keypad (58) for receiving the telephone numbers and commands; and means (45) for transmitting the audio signals and decoded bar coded information to and receiving communication signals from the communications network.

24. The communications system

wherein the converting means comprises: means (11) for decoding the electrical signals digitized by the digitizing means into decoded bar code information.

25. The communications system

wherein each telephone set is of a corded, cordless or cellular type.

26. The communications system

wherein the optical scanner includes a scan module having: a laser light source (16) for emitting the light beam; a lens system (22) to focus the light beam; a mirror (26) for directing the light beam focused by the lens system to the bar code; a motor (28) for oscillating the laser light source or the mirror such that the light beam scans across the bar code; and a detector (30) for detecting the light beam reflected from the bar code.

27. The communications system

wherein the telephone set includes a window (5) for light passing between the optical scanner (1) and the bar code.

28. The communications system

wherein the printed medium is a catalogue having at least one of the following: bar-coded telephone numbers, user identifications, user address, item information, shipping method, shipping address, and payment method.

29. The communications system

wherein the printed medium is a credit card having a bar coded account number.

30. The telephone set

wherein the indicia are bar code indicia.

31. The telephone wherein the indicia are bar code indicia.

32. A portable remote controller (10) characterised by:

a bar code scanner (18);

signal transmitting means (16) adapted to transmit a control signal for remote control of a television and of a video recorder;

user input means (12);

memory means (34);

real-time clock means (36) arranged to produce a clock signal;

the bar code scanner being arranged to scan a bar code symbol (20) representative of a television program and including program start time and channel information, said information then being stored in the memory (34);

means (30) for repeatedly comparing the stored start time with the clock signal and when the clock signal corresponds with the start time providing an indication to a user that the program is about to start;

means (16) for transmitting a control signal from the signal transmitting means to a video recorder instructing the video recorder to record the program if no response to the indication is received from the user via the user input means; and

means (16) for transmitting a control signal from the signal transmitting means to a television, instructing the television to switch to the appropriate channel so allowing the user to view the program if a response is received from the user, via the user input means.

33. A portable remote controller

in which the signal transmitting means further includes means for transmitting a signal to the television instructing the television to switch itself on if a response is received from the user, via the user input means (12).

34. A portable remote controller

in which the user input means (12) comprises a keyboard.

35. A portable remote controller

in which the user input means comprises a user operable push-button (12'), the remote controller further including keyboard means enabling the user to store program start time and channel information in the memory without using the bar code scanner (18).

36. A portable remote controller

in which the said indication to the user is an aural indication.

37. A portable remote controller

in which the user input means includes means whereby the user can indicate that the program is

both to be viewed and recorded, and means (18) for transmitting control signals both to the television and to the video recorder in the event that the user so indicates.

38. A portable remote controller which is integrated into a portable or mobile telephone handset (49).

39. A portable remote controller comprising:

a bar code scanner (18);

signal transmitting means (16) adapted to transmit a control signal for remote control of a video recorder;

telephone control means adapted to send a control signal to a telephone;

user input means (12);

memory means (34);

real time clock means (36) arranged to produce a clock signal;

the bar code scanner (18) being arranged to scan a bar code symbol representative of a telephone program and including program start time, channel information, and ordering details of a product or service associated with the said television program;

means (30) for repeatedly comparing the start time with the clock signal and when the clock signal corresponds with the start time, causing the signal transmitting means to transmit a control signal instructing the video recorder to record the program; and

means for actuating the telephone control means, on receipt of instructions from a user via the user input means (12), instructing the telephone to call a supplier and automatically to place an order for the product or service.

40. A portable remote controller in which the memory means (34) includes means for storage of user billing information.

41. A portable remote controller in which the telephone control means comprises means adapted to transmit the control signal for remote control of the telephone.

42. A portable remote controller in which the telephone control means comprises the signal transmitting means (16).

43. A portable remote controller incorporating an integral telephone handset (49).

44. A portable remote controller the controller being integrated within a portable or mobile telephone handset (49).

45. A portable remote controller

in which the signal transmitting means is arranged to transmit the control signal using an infrared beam.

Claims

1. A telephone set (6) enabling reading of indicia comprising:

(a) means for transmitting and receiving audio signals over a communications network; characterised by

(b) an optical scanner (1) having

(i) means for emitting and automatically deflecting a light beam to scan across the indicia,

(ii) means for detecting the light beam reflected back from the indicia and producing corresponding electrical signals, and

(iii)means (11,12) for converting the electrical signals into decoded indicia information.

2. The telephone set of Claim 1, wherein the optical scanner (1) is in a handset (4) of the telephone, and the handset includes a trigger (8) for activating the optical scanner to read the indicia.

3. The telephone set of Claim 1, wherein the optical scanner (1) is in a base unit of the telephone, and wherein the telephone comprises a button (8) for activating the optical scanner to read the indicia,

preferably comprising means (14) for powering the optical scanner (1).

4. The telephone set of Claim 1, further including a manual control for entering and cancelling indicia which have been read by the optical scanner (1) for transmission on the communications network.

5. The telephone set of Claim 1 further comprising: a memory (56) for storing decoded indicia information, telephone numbers or programs for executing commands inputted to the telephone set; a keypad (58) for receiving the telephone numbers and commands; and means (45) for transmitting the audio signals and decoded indicia information and receiving communication signals from the communications network.

6. The telephone of Claim 1, wherein the emitting and detecting means are incorporated into a scan module (10) having: a laser light source (16) for emitting the light beam, a lens system (22) to focus the light beam, a mirror (26) for directing the light beam focused by said lens system to the indicia, a motor for oscillating said laser light source or said mirror such that the light beam scans across the indicia, and a detector (30) for detecting the light beam reflected from the indicia,

wherein preferably the emitting and receiving means further comprises a window (20) for light passing between the scan module and detecting means.

7. The telephone set of Claim 1, wherein the converting means comprises: means (11) for digitizing the electrical signals; and means (12) for decoding the electrical signals, digitized by the digitizing means, into decoded indicia information,

wherein preferably the telephone set (6) is of a

corded, cordless or cellular type.

8. A telephone coupled to a communications network comprising:

(a) a handset having

(i) means for receiving and transmitting audio signals,

(ii) a reader (1) for reading indicia, and

(iii)a trigger (8) on the handset for activating the reader to convert the indicia into decoded indicia information; and

means for transmitting the audio signals and decoded indicia information over the communications network.

9. The telephone of Claim 8, wherein the reader (1) is an optical scanner including means (16,26) for emitting and automatically deflecting a light beam to scan across the indicia; means (30) for detecting the light beam reflected back from the indicia and producing corresponding output electrical signals; and means (11,12) for converting the electrical signals into decoded indicia information,

wherein preferably the handset further includes a rechargeable battery (14) for powering the bar code reader during portable operation of the handset,

wherein preferably the bar code reader includes a scan module having: a laser light source (16) for emitting the light beam; a lens system (22) to focus the light beam; a mirror (26) for directing the light beam focused by the lens system to the indicia; a motor (28) for oscillating the laser light source or the mirror such that the light beam scans across the indicia; and a detector (30) for detecting the light beam reflected from the indicia,

further preferably comprising: a memory (56) for storing decoded indicia information, telephone numbers or programs for executing commands inputted to the telephone set; a keypad (58) for receiving the telephone numbers or commands; and means (45) for transmitting the audio signals and decoded indicia information to the communications network and for receiving communication signals from the communications network , and

wherein preferably the handset includes a window (5) for light passing between the handset and bar code.

10. A communications system for transmitting decoded bar code information, comprising: a telephone system comprising a plurality of telephone sets (6A,6B,6C) each of the plurality of telephone sets having a built-in optical scanner (1) for reading bar codes on a printed medium for transmission as decoded bar code information; a host processor for receiving the decoded bar code information and transmitting instructions to the telephone system; and a communications network (46) for establishing connection between the telephone system and the host processor.

11. The communications system of Claim 10 wherein the optical scanner comprises:

(i) means for emitting and automatically deflecting a light beam to scan across a bar code,

(ii) means (3) for detecting the light beam reflected back from the bar code and producing corresponding electrical signals, and

(iii) means (11,12) for converting the electrical signals into decoded bar code information.

12. The communications system of Claim 10 or 11, wherein for each telephone set, the optical scanner (1) is in a handset of the telephone set, the handset including a trigger (8) for activating said optical scanner to read the bar code,

wherein preferably, for each telephone set, the optical scanner (1) is in a base unit of the set, the base unit including a button (8) for activating the optical scanner to read the bar code,

wherein preferably each telephone set further comprises means for powering the optical scanner,

wherein preferably each telephone set further includes a button for entering and cancelling bar codes which have been read by the optical scanner for transmission on the communications network.

wherein preferably each telephone set further comprises: a memory (56) for storing decoded bar code information, telephone numbers or programs for executing commands inputted to the set; a keypad (58) for receiving the telephone numbers and commands; and means (45) for transmitting the audio signals and decoded bar coded information to and receiving communication signals from the communications network,

wherein preferably the converting means comprises: means (11) for decoding the electrical signals digitized by the digitizing means into decoded bar code information.

wherein preferably each telephone set is of a corded, cordless or cellular type.

26. The communications system of Claim 17, wherein the optical scanner includes a scan module having: a laser light source (16) for emitting the light beam; a lens system (22) to focus the light beam; a mirror (26) for directing the light beam focused by the lens system to the bar code; a motor (28) for oscillating the laser light source or the mirror such that the light beam scans across the bar code; and a detector (30) for detecting the light beam reflected from the bar code,

wherein preferably the telephone set includes a window (5) for light passing between the optical scanner (1) and the bar code,

wherein preferably the printed medium is a catalogue having at least one of the following: bar-coded telephone numbers, user identifications, user address, item information, shipping method, shipping address, and payment method,

wherein preferably the printed medium is a

credit card having a bar coded account number,

wherein preferably the indicia are bar code indicia.

13. A portable remote controller (10) characterised by:

a bar code scanner (18);

signal transmitting means (16) adapted to transmit a control signal for remote control of a television and of a video recorder;

user input means (12);

memory means (34);

real-time clock means (36) arranged to produce a clock signal;

the bar code scanner being arranged to scan a bar code symbol (20) representative of a television program and including program start time and channel information, said information then being stored in the memory (34);

means (30) for repeatedly comparing the stored start time with the clock signal and when the clock signal corresponds with the start time providing an indication to a user that the program is about to start;

means (16) for transmitting a control signal from the signal transmitting means to a video recorder instructing the video recorder to record the program if no response to the indication is received from the user via the user input means; and

means (16) for transmitting a control signal from the signal transmitting means to a television, instructing the television to switch to the appropriate channel so allowing the user to view the program if a response is received from the user, via the user input means.

14. A portable remote controller as claimed in Claim 13 in which the signal transmitting means further includes means for transmitting a signal to the television instructing the television to switch itself on if a response is received from the user, via the user input means (12),

in which preferably the user input means (12) comprises a keyboard,

in which preferably the user input means comprises a user operable push-button (12'), the remote controller further including keyboard means enabling the user to store program start time and channel information in the memory without using the bar code scanner (18),

in which preferably the said indication to the user is an aural indication,

in which preferably the user input means includes means whereby the user can indicate that the program is both to be viewed and recorded, and means (18) for transmitting control signals both to the television and to the video recorder in the event that the user so indicates , and

which is preferably integrated into a portable or mobile telephone handset (49).

15. A portable remote controller comprising:

a bar code scanner (18);

signal transmitting means (16) adapted to transmit a control signal for remote control of a video recorder;

telephone control means adapted to send a control signal to a telephone;

user input means (12);

memory means (34);

real time clock means (36) arranged to produce a clock signal;

the bar code scanner (18) being arranged to scan a bar code symbol representative of a telephone program and including program start time, channel information, and ordering details of a product or service associated with the said television program;

means (30) for repeatedly comparing the start time with the clock signal and when the clock signal corresponds with the start time, causing the signal transmitting means to transmit a control signal instructing the video recorder to record the program; and

means for actuating the telephone control means, on receipt of instructions from a user via the user input means (12), instructing the telephone to call a supplier and automatically to place an order for the product or service.

16. A portable remote controller as claimed in Claim 15 in which the memory means (34) includes means for storage of user billing information,

in which preferably in which the telephone control means comprises means adapted to transmit the control signal for remote control of the telephone,

in which preferably the telephone control means comprises the signal transmitting means (16),

incorporating preferably an integral telephone handset (49). the controller being integrated within a portable or mobile telephone handset (49), and

in which preferably the signal transmitting means is arranged to transmit the control signal using an infrared beam.

17. A telephone set (6) enabling reading of indicia comprising:

an optical scanner (1) having

(i) means for emitting a light beam to scan across the indicia;

(ii) means for detecting the light beam reflected back from the indicia and producing corresponding electrical signals, and

(iii) means (11,12) for converting the electrical signals into decoded indicia information.

FIGURE 1A

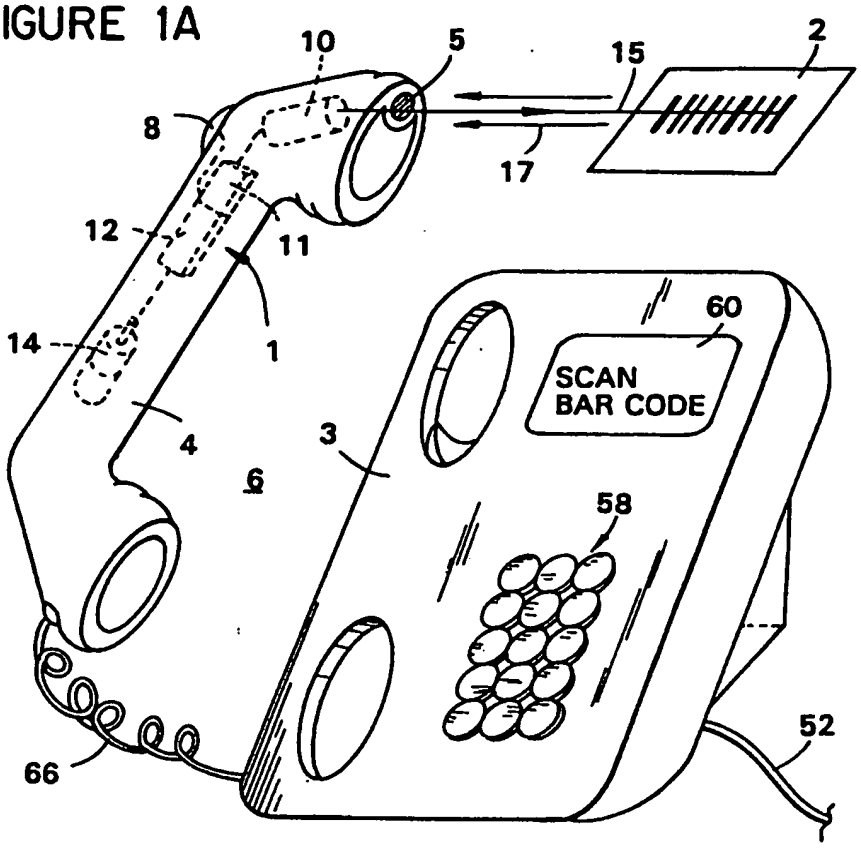
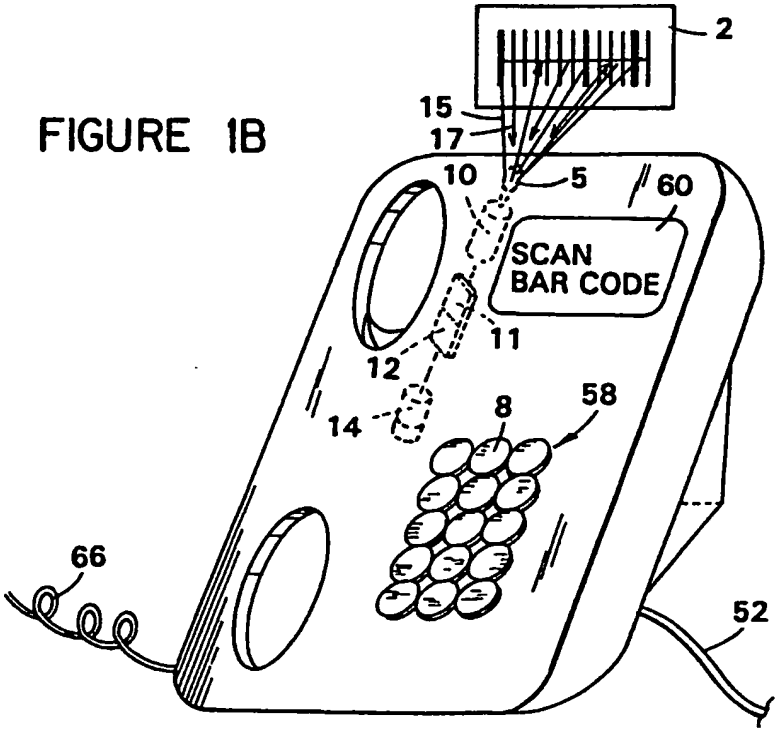


FIGURE 1B



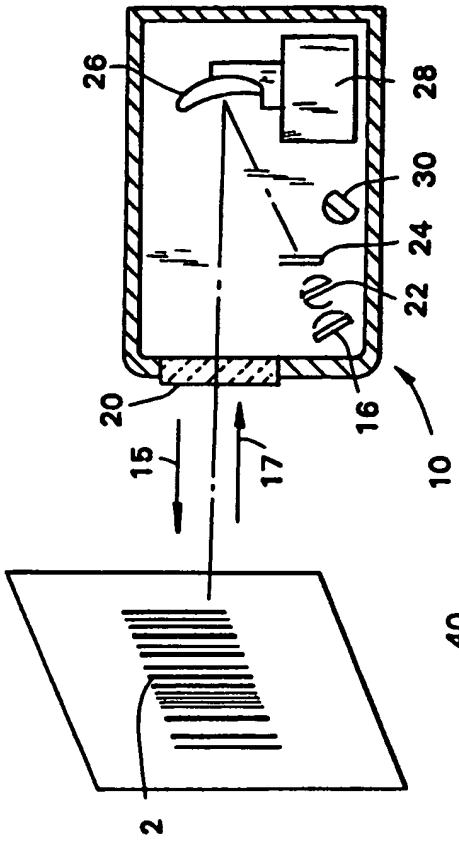


FIGURE 2

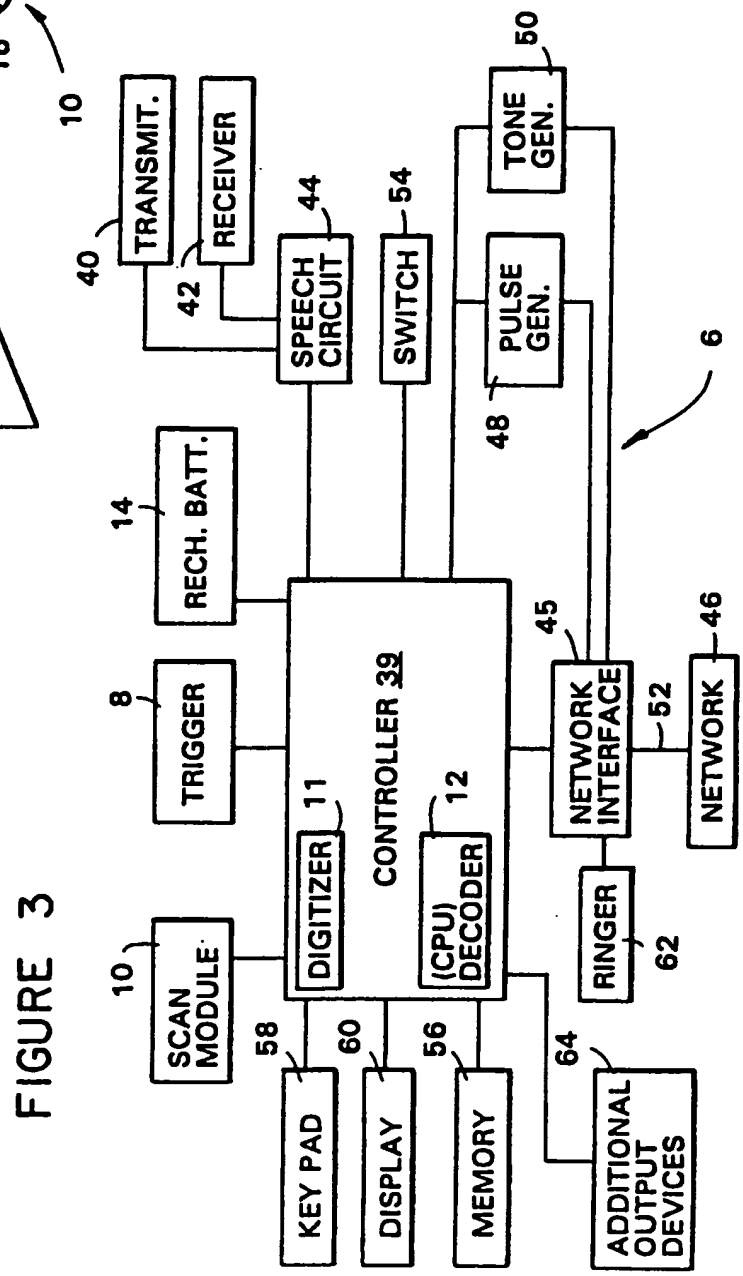
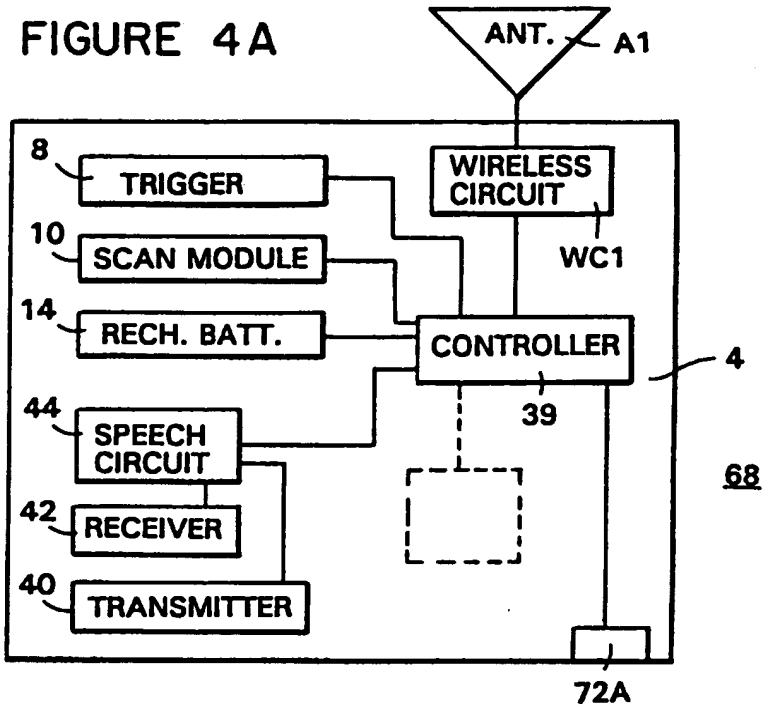


FIGURE 3

FIGURE 4A



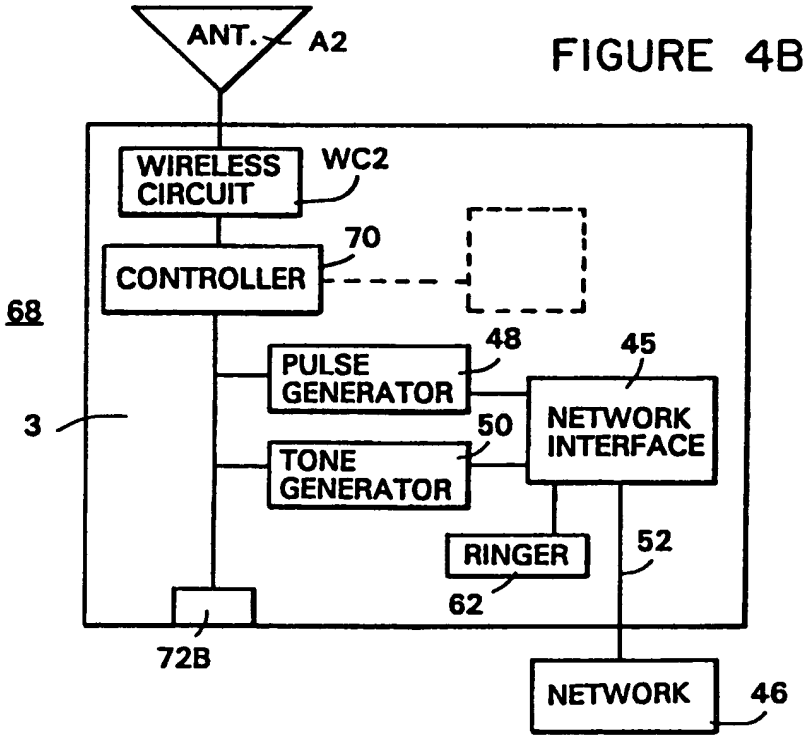


FIGURE 4B

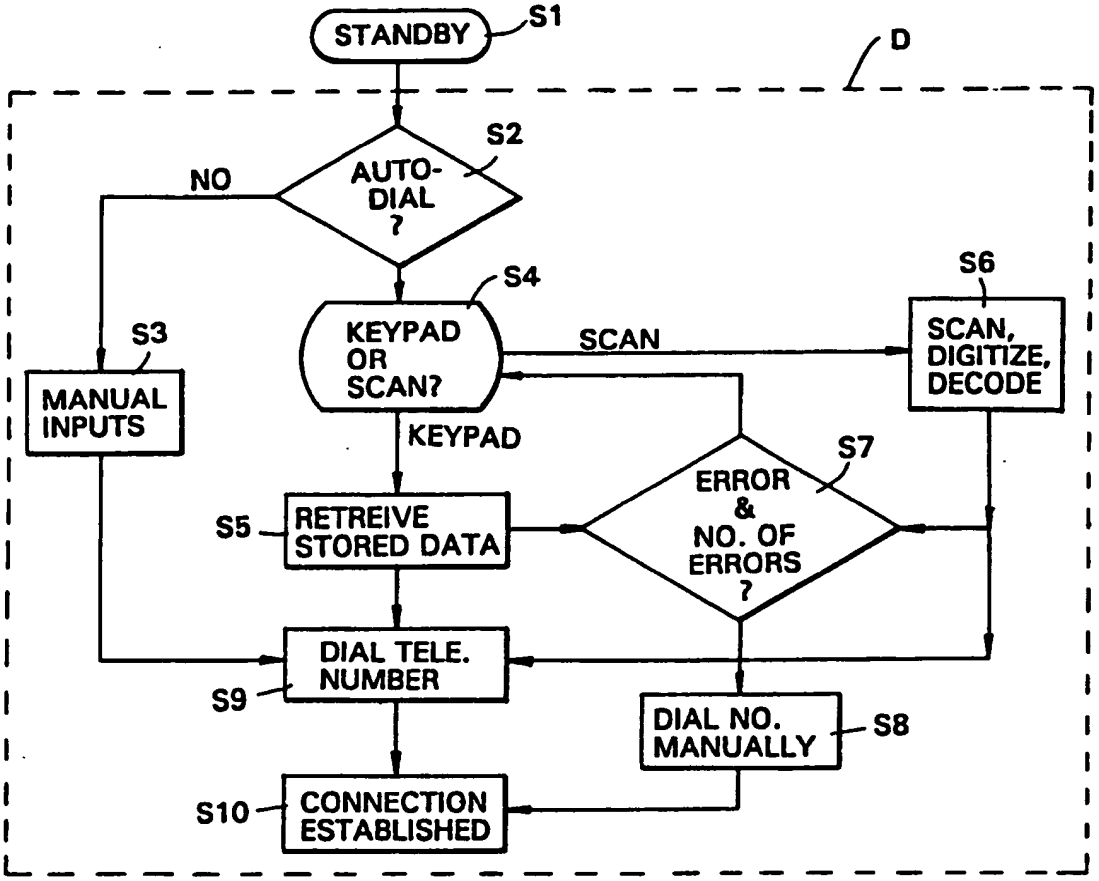


FIGURE 5

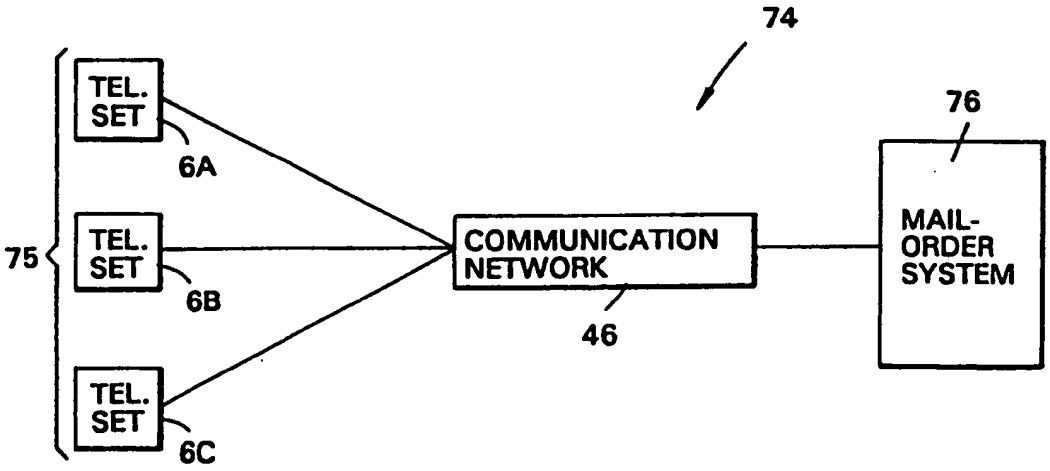
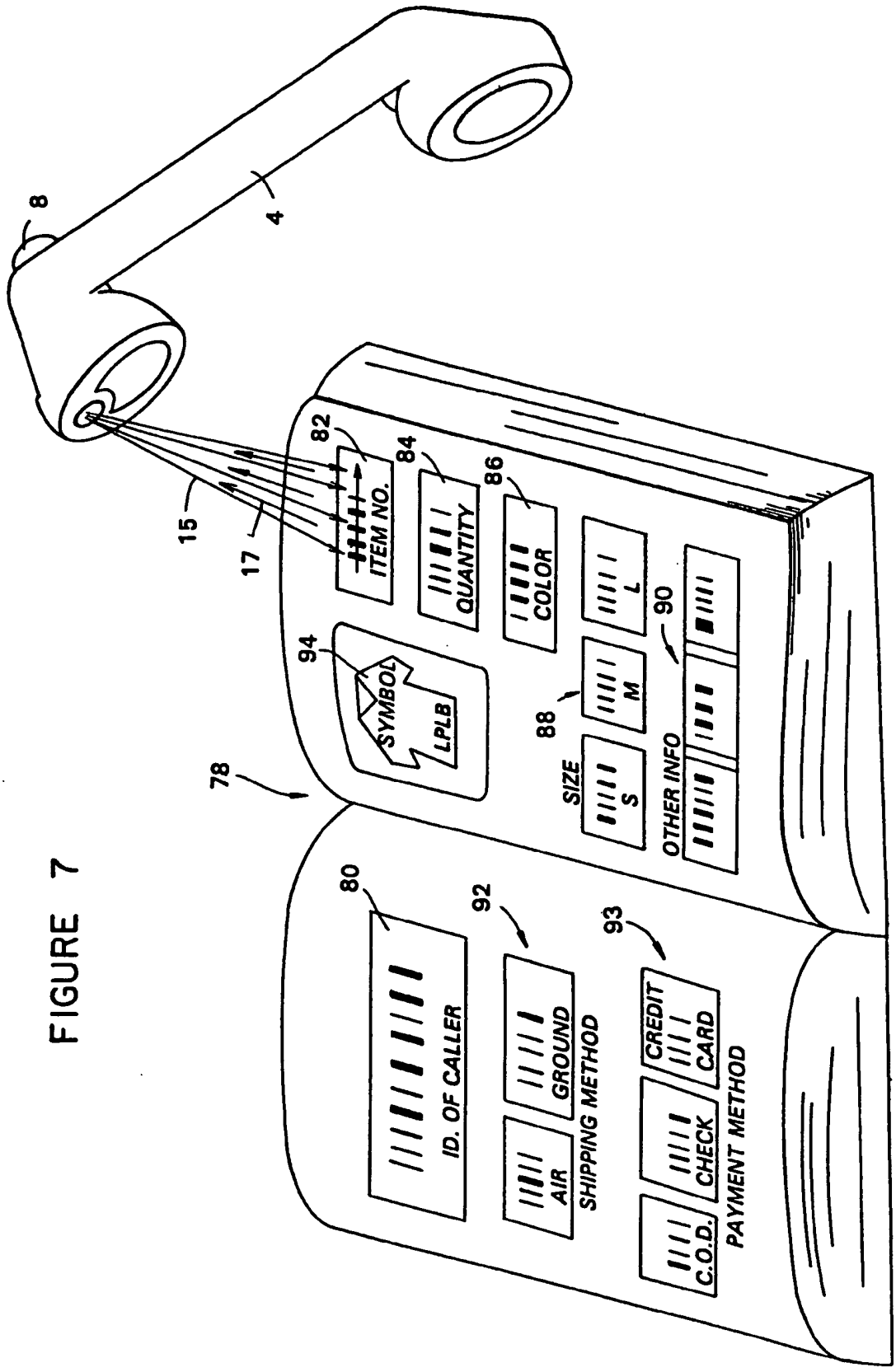


FIGURE 6

FIGURE 7


8
4
15
17
82
ITEM NO.
84
QUANTITY
86
COLOR
L
90
94
SYMBOL
LPLB
88
M
SIZE
S
OTHER INFO
78
80
ID. OF CALLER
92
AIR
GROUND
SHIPPING METHOD
93
C.O.D.
CHECK
CREDIT CARD
PAYMENT METHOD

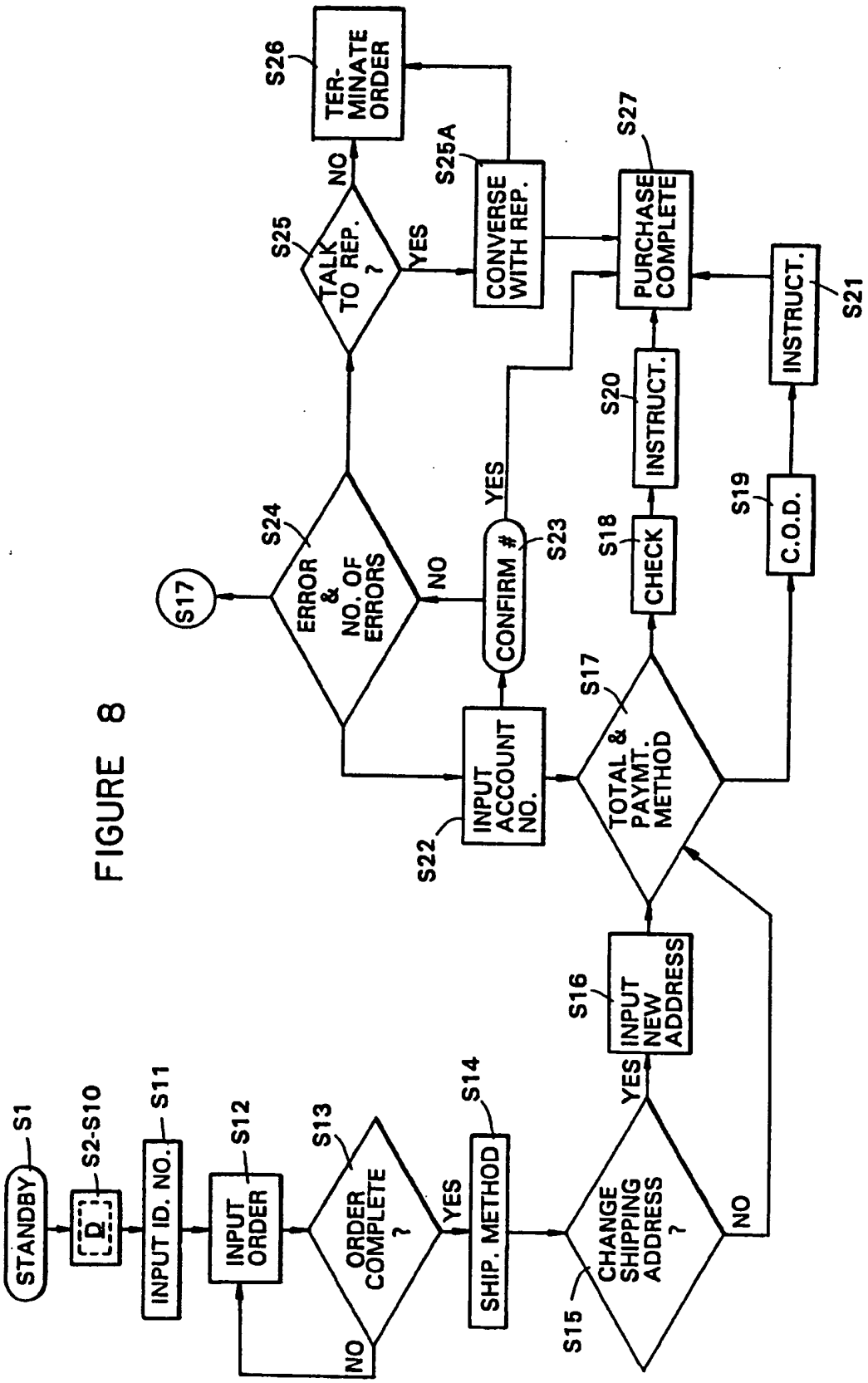

STANDBY
S1
D
S2-S10
INPUT ID. NO.
S11
INPUT ORDER
S12
ORDER COMPLETE ?
S13
NO
YES
SHIP. METHOD
S14
CHANGE SHIPPING ADDRESS ?
S15
YES
NO
INPUT NEW ADDRESS
S16
TOTAL & PAYMT. METHOD
S17
INPUT ACCOUNT NO.
S22
CONFIRM #
S23
YES
NO
ERROR & NO. OF ERRORS
S24
S17
TALK TO REP. ?
S25
NO
YES
TER-MINATE ORDER
S26
CONVERSE WITH REP.
S25A
CHECK
S18
INSTRUCT.
S20
C.O.D.
S19
PURCHASE COMPLETE
S27
INSTRUCT.
S21

FIGURE 8

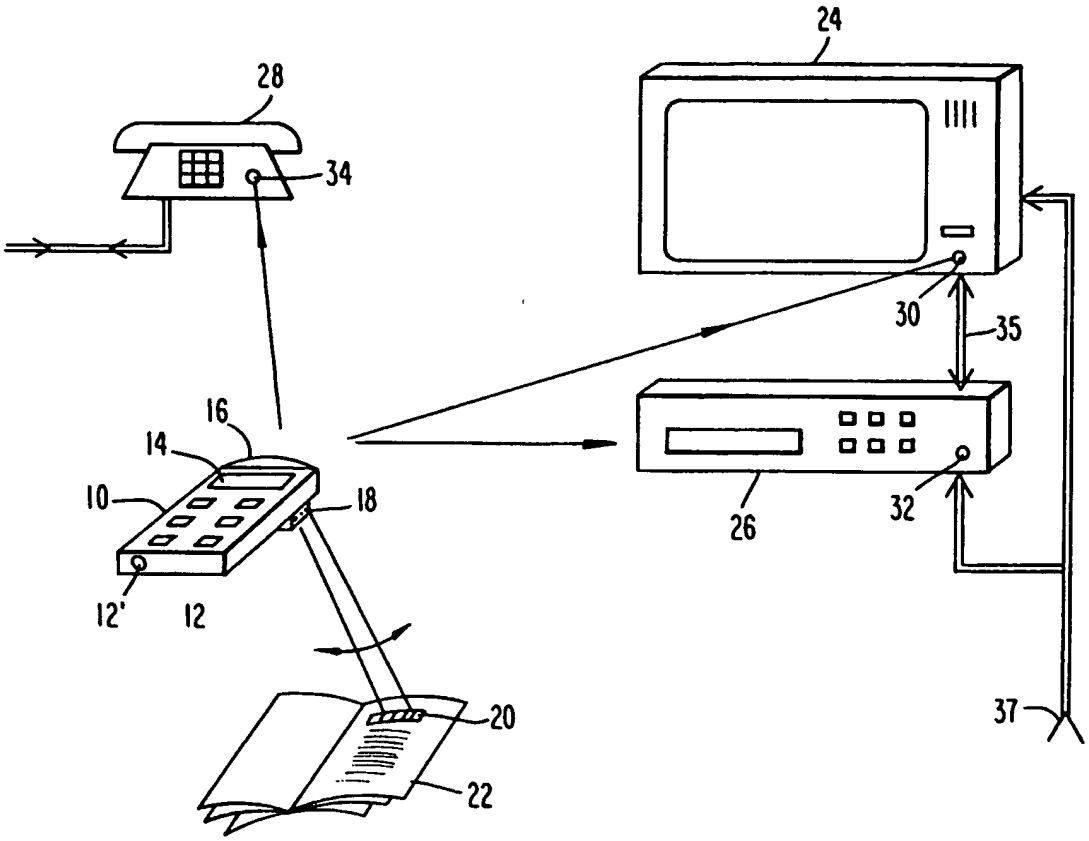


FIGURE 9A

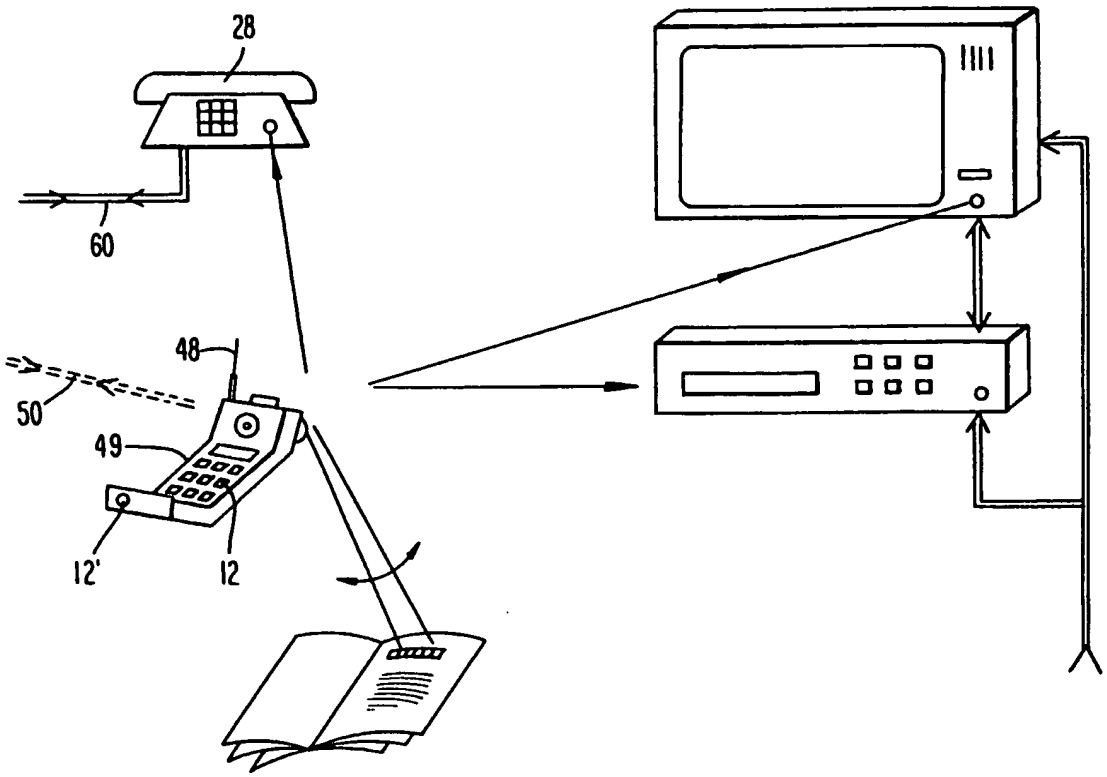


FIGURE 9B

FIGURE 10A

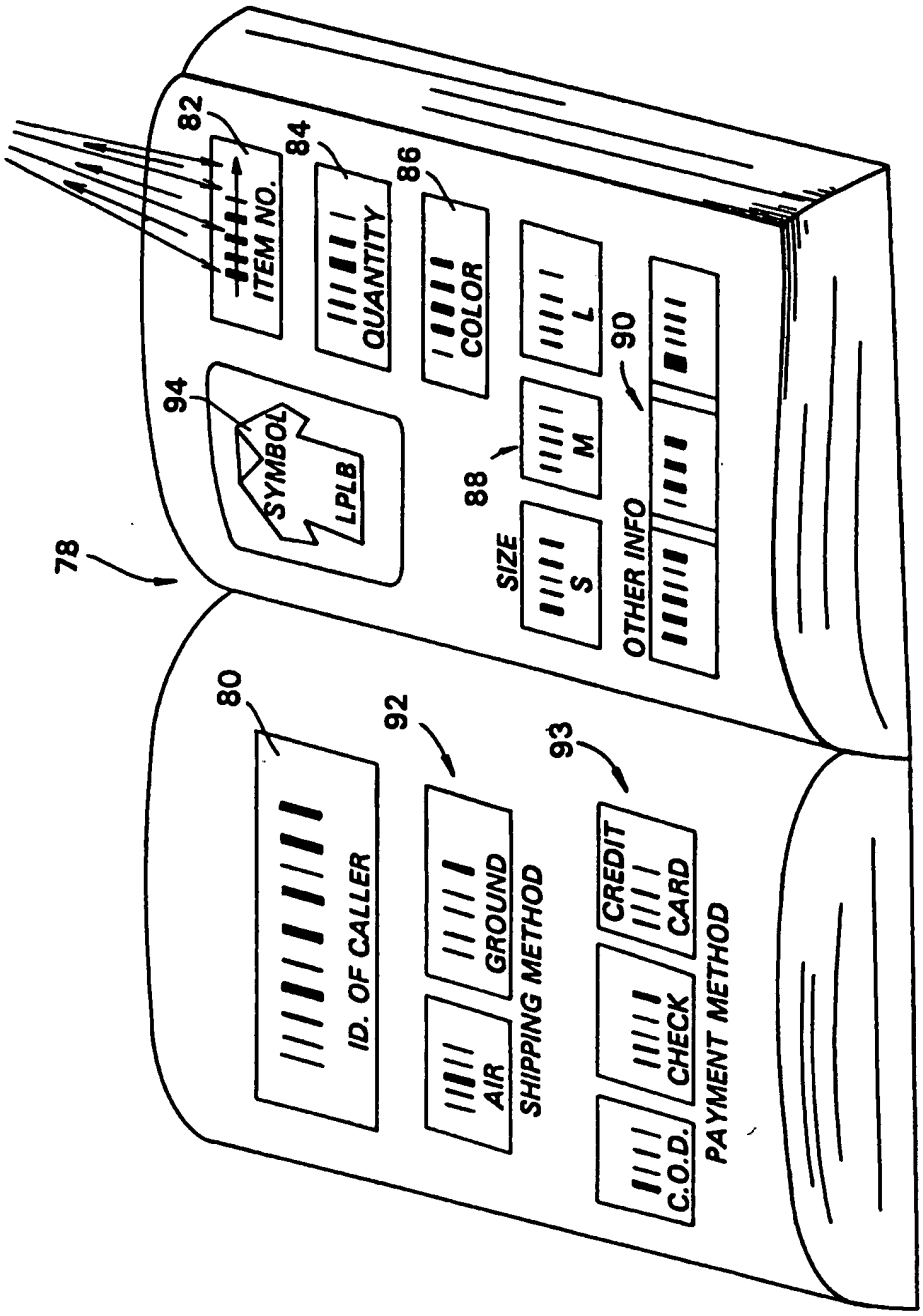
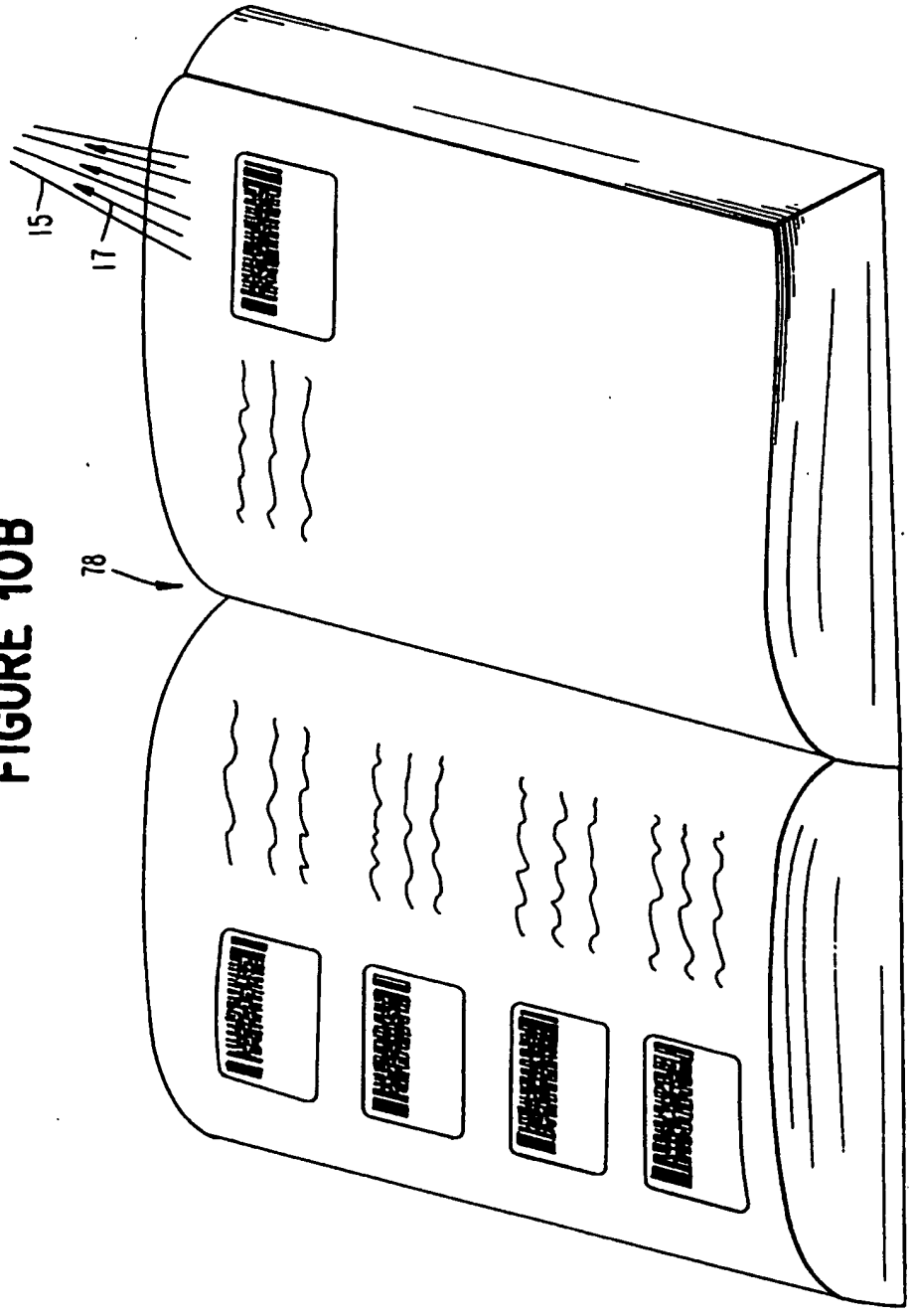

78
82
ITEM NO.
84
QUANTITY
86
COLOR
94
SYMBOL
LPL8
88
SIZE
S
M
L
90
OTHER INFO
80
ID. OF CALLER
92
AIR
GROUND
SHIPPING METHOD
93
C.O.D.
CHECK
CREDIT CARD
PAYMENT METHOD

FIGURE 10B



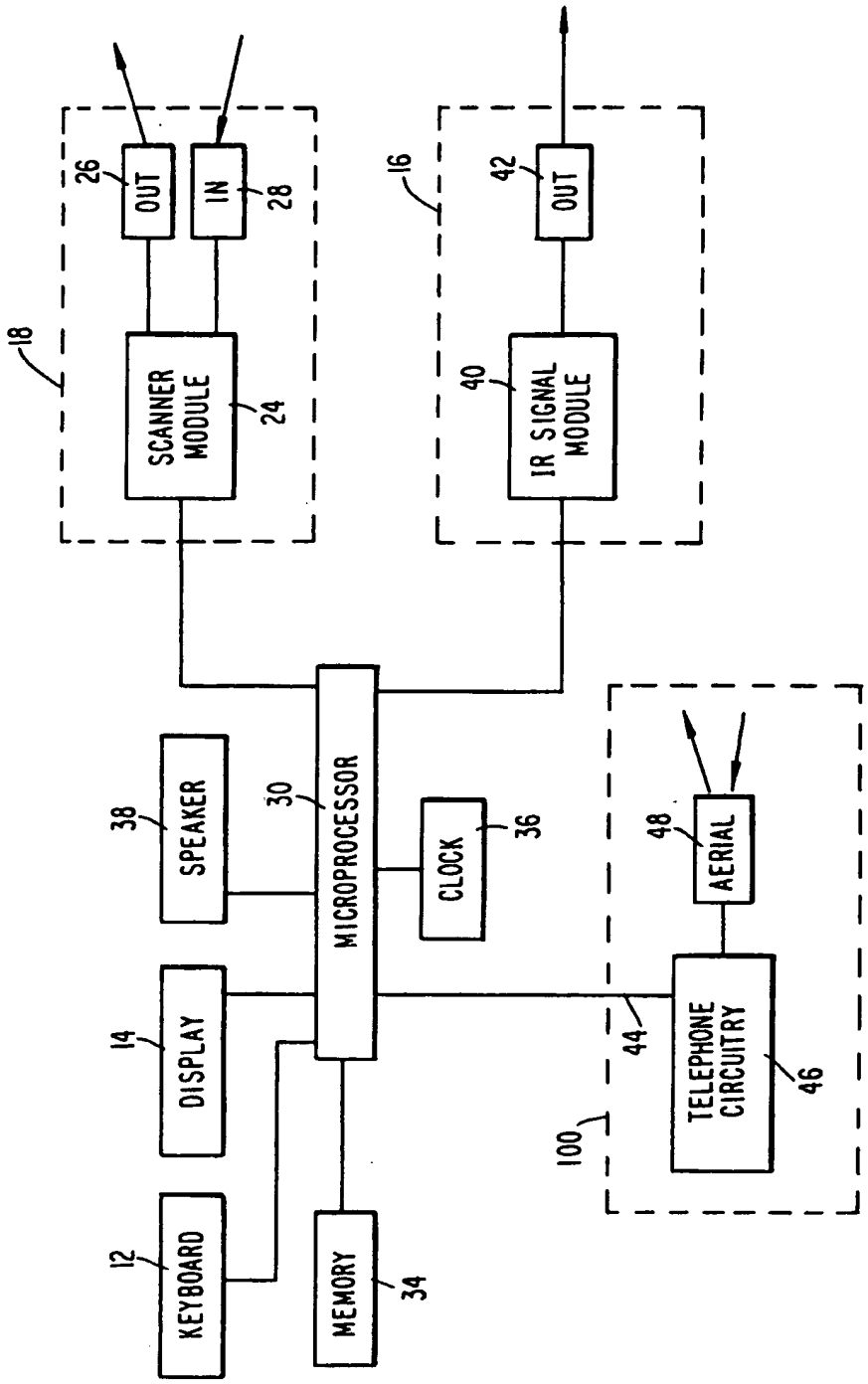

18
26
OUT
IN
28
SCANNER MODULE
24
16
42
OUT
40
IR SIGNAL MODULE
38
SPEAKER
30
MICROPROCESSOR
CLOCK
36
48
AERIAL
14
DISPLAY
12
KEYBOARD
MEMORY
34
44
TELEPHONE CIRCUITRY
46
100

FIGURE 11